

UC Berkeley

UC Berkeley Previously Published Works

Title

On reconstructing tone in Proto-Niger-Congo

Permalink

<https://escholarship.org/uc/item/2kp7v1gj>

Author

HYMAN, Larry M

Publication Date

2022-12-22

Peer reviewed

Larry M. Hyman

University of California, Berkeley, hyman@berkeley.edu

ON RECONSTRUCTING TONE IN PROTO-NIGER-CONGO

“It is generally believed that Proto-Niger-Congo had at least two tones, but no serious reconstruction has yet been done.”
(Williamson & Blench 2000:38)

1. Introduction

In preparing this paper for presentation my original motivation was to address the question of how far outside of Narrow Bantu the widely accepted reconstructed *H and *L tones of Proto-Bantu (PB) lexical morphemes correspond (Greenberg 1948; Meeussen 1969 [1980]; Bastin, Coupez, Mumba & Schadeberg 2002).¹ The various possibilities include languages/language subfamilies at different levels of Niger-Congo (NC): (i) Bantoid; (ii) East Benue-Congo (Cross-River, Central Nigerian); (iii) Benue-Kwa; (iv) Volta-Congo.... (v) Niger-Congo (Williamson & Blench 2000:18). It is generally assumed that an early proto language, e.g. Proto-Niger-Congo (PNC) was tonal and had two tones, *H and *L (cf. Hombert 1984:119):

“Tone can be reconstructed for Proto-Niger-Congo... but also represents an areal phenomenon...” (Childs 1995a:13).

“... at least two basic tonemes, marked by a high and a low pitch respectively, existed in PWN [Proto-Western Nigritic—roughly Atlantic, Gur, and old Kwa]” (Mukarovsky 1977:168).

There are several reasons behind this “intuition”:

- First, almost all NC languages are tonal, including those controversial inclusions such as Mande, Dogon, and Ijoid.

¹ An earlier version of this paper was presented at the 2nd International Conference “Towards Proto-Niger-Congo: Comparison and Reconstruction”, Paris, Sept. 1-3, 2016. I was delighted that Alexander Zheltov also presented a paper, since we have enjoyed a close friendship ever since he, Elena, Katya and Sasha spent eight months on a Fulbright in Berkeley in 2002-3. It is an honor to dedicate this paper to him.

- Second, non-tonal NC languages are geographically peripheral and are generally assumed to have lost their tone via natural tone simplification processes (cf. Childs 1995b) and/or influence from neighboring non-tonal languages (cf. Hombert 1984:154-5). This includes not only Swahili in the East, but also Northern Atlantic (Fula, Seereer, Wolof etc.), Koromfé (Northern Central Gur; Rennison 1997:16) and (outside NC) Koyra Chiini (Songhay; Heath 1999:48), which could be the effect of contact with Berber or Arabic, either directly or through Fula (Childs 1995b:20). The only geographic exception concerns certain largely contiguous zone G, M and N Bantu languages (e.g. Pogolo, Nyakyusa, Tumbuka).
- Third, possible pathways for Niger-Congo tonogenesis are unsupported and can only be speculative. There is no evidence of a transphonologization from, say, breathy or glottalized stops, for instance. If I had to speculate myself, I would wonder if some ancient ancestor had consonant clusters (CC) which might have become hC and/or ?C, these latter then triggering tonogenesis. Most NC languages do not have complex syllables, so this does not seem far-fetched. However, there is no evidence for it that I am aware of.
- Finally, languages with 3, 4 or 5 tone heights are generally assumed to have innovated them either from the effect of depressor consonants or tonal interactions, as can be extrapolated from more recent developments, e.g. in Kru and Bantoid, respectively. Thus:

“No mid tone has been reconstructed for PUC [Proto-Upper-Cross] so far. The mid tone in eg., KoHumono seems to be the result of a secondary split of high, in most cases because of some depressor consonant....” (Dimmendaal 1978:185)

This having been said, there are both methodological and practical issues in reconstructing morpheme-specific tones at the PNC level:

First, PNC presents a huge time depth during which tones will have likely changed, perhaps dramatically, due to mergers, splits, and contextual tonal interactions with other morphemes.

Second, for nouns, the stem tone is often affected by the noun class marker, either a prefix or suffix; in PB the initial augment morpheme had a *H tone which often shifts onto the L tone noun class prefix or stem. In addition, given de Wolf’s (1971) reconstruction of different tones on Proto-Benue-Congo noun class prefixes, if noun classes have merged here and there, with *H or *L fusing onto the noun stems, this could complicate our ability to detect regular tonal correspondences. Additional problems will

occur in languages which have lost the second syllable of the mostly bisyllabic Proto-Bantu noun stem. (It is important in this context that we avoid undue Bantu-centrism.)

Third, for verbs, it is well-known that many NC languages do not have a lexical tonal contrast on verb roots, e.g. Kisi (Atlantic), Konni, Kulango (Gur), Ejagham (Edoid), Cicipu (West Kainji), Zande (Ubangi), not to mention many Bantu languages, where tones are assigned by the inflectional morphology (tense-aspect-mood-negation)—these languages will be largely irrelevant in the search for tonal correspondences with PB lexical verb tones.

Finally, it should be noted that for both word classes, it is easier to identify cognates in languages which have CVC roots vs. those which have shortened them to CV, e.g. Yoruboid, Nupoid, and Igbooid, where most nouns are V-CV, and verbs are CV.

Despite the above problems, there is a belief that a tonal correspondence strengthens the likelihood of cognacy: “Despite the rare attestations the similarity of forms and tone argues that this is reconstructed to South Bantoid” (Blench 2004[2016]:155). There thus are quite a number of problems to overcome in reconstructing tone at the NC level.

2. The strategy in this study

The proposal for the current study is to look exclusively at verbs, where the task might be expected to be both easier and more interesting. It may be easier since most PB verb roots are reconstructed with only one syllable (vs. mostly bisyllabic nouns). There is some generality to this in various NC subbranches, e.g. “Igbooid roots, as seen in verbs, are uncompromisingly monosyllabic” (Williamson, Blench & Ohiri-Aniche 2016:2). This means that we could be comparing verbs roots for their correspondence to a single proto *H or *L tone. Looking at verb tones might also be more interesting, since verb roots often do not occur in isolation. In particular, the suffixal morphology (e.g. verb extension tones) may provide important hints as to the nature of earlier states, ultimately PNC vs. noun morphology, which is presently much more under control.

What this means is that we now have THREE goals, namely to see (i) if non-Bantu verb root tones correspond with PB; (ii) if anything can be said about the tones of cognate verb extensions; (iii) if (ii) can tell us more concerning what the nature might have been of early verb structure in NC. (We also would ultimately be interested in the inflectional marking of tense, aspect, mood and negation, but reconstruction of specifics has proven to be excessively rich and complicated enough, even within Bantu (see Nurse 2008).)

To get started I first consulted Mukarovsky (1976-7), who had already claimed that Bantu verb tones correspond to his Proto-Western-Nigritic (PWN), i.e. as far away as (tonal) “Atlantic” languages. Importantly, it should be noted that Mukarovsky draws mostly from Guthrie’s (1967-71) Common Bantu (CB), and cites earlier (often incorrect) suggestions for PB, i.e. from studies preceding Meeussen (1969[1980]), to which he apparently did not have access. Among his 653 proposed reconstructions are 287 verbs, i.e. 44.0%. Of these 58 have a tonal reconstruction. Although these allow for a comparison with PB, many of the correspondences are of questionable cognacy (see below). In addition, some of the cited CB/PB forms are not reliably reconstructed — I have checked their “fiabilité” scores in Bastin et al (2002). Finally, many reconstructed PWN tones are based only on a few languages. What the comparison yields is seen in Table 1:

Table 1. Corresponding tones between PWN and CB/PB (Mukarovsky)

PWN	CB/PB		PWN	CB/PB		PWN Totals
*H	*H	24	*H	*L	11	35 *H
*L	*L	20	*L	*H	3	23 *L
corresponding:		44	non-corresponding:		14	

By about a 3 to 1 ratio (44 vs. 14), the tones of PWN and CB/PB correspond. However, in some cases I could not see from the cited examples, why one vs. another tone was reconstructed. It is likely that Mukarovsky was influenced by the tones in Guthrie’s CB forms, i.e. Bantu-centrism.

Another long-range reconstruction effort is Stewart’s (2002:214-223) Proto-Potou-Akanic-Bantu (PPAB), with 54 verb roots out of 109 reconstructions, or 49.5%. Although tone is not reconstructed, of the 54 verb roots, 36 have PWN correspondences. Of these, 26 are reconstructed without tone by Mukarovsky (including PWN **kual* ‘cough’). The remaining 10 are equally divided: 5 are reconstructed with *H by Mukarovsky (including PWN **kwác* ‘cough’), and 5 are reconstructed with *L. These 10 forms are provided in Tables 2 and 3, where I have also added correspondences to Proto-Upper-Cross (PUC) (Dimmendaal 1978) and Proto-Igboïd (PIgb) (Williamson, Blench & Ohiri-Aniche 2016):

Table 2. PWN *H tone correspondences

PWN	PPAB	PB (BLR)	PUC	PIgb	
*khwú	*k ^w u	*kó	*k ^w á	*ŋóó	‘die’
*bíl	*bílĩ	*bí		*wé	‘become cooked’
*dád	*ḍa	*dáad	*DáBí	*ḍáá̃ (HL)	‘lie down, sleep’
*kwác	*k ^w apĩ	*kócɪd		*k ^w á	‘cough’
*ní	*nĩ	*nì	*nè	*nĩ̃̃ (HH)	‘defecate’ (with tonal discrepancies)

Table 3. PWN *L tone correspondences

PWN	PPAB	PB (BLR)	PUC	PIgb	
*pìn	*pĩĩ̃	*pìn		*pĩ	‘press, squeeze’
*kì	*k’ ĩ̃	*ké		*í-ŋ-kí (n.)	‘dawn’ (with tonal discrepancies)
*gìl	*gili	*gìd		*Jě̃ (H)	‘abstain, avoid’
*lùk	*[ɔ̃ŋkɔ̃]	*dòk	*nòkà	(*kpǎ)	‘plait’
*mìl	*mĩĩ̃	*mèd	*mèn	(*no [?], *ḍiwẽ̃)	‘swallow’

There will of course be many more tonal correspondences with languages in groups that are more closely related to PB. Proto-Grassfields Bantu works almost perfectly (Hyman 1979; Elias, Leroy, & Voorhoeve 1984), as does Noni (Bantoid: Beboïd). Noni has /H, M, L/, but verb roots show only a binary contrast, which I indicate below as H vs. L (Hyman 1981). Working from Mukarovsky’s PWN, I found 85 Noni verbs with PB correspondences:

Table 4. Corresponding tones between Noni and Proto-Bantu

Noni	PB		Noni	PB		Totals
H	*H	46	H	*L	4	35 *H
L	*L	26	L	*H	4	23 *L
corresponding:		72	non-corresponding:		8	

As seen, the tones overwhelmingly correspond. (Five of the 85 correspondences are not counted, since the PB tone is uncertain.)

Moving a little further away, drawing from a 1485 entry lexical database of Leggbo (Upper Cross) created with Imelda Udoh, I found 45 verbs which correspond to PWN/PB. Although Leggbo has /H, M, L/, verb roots show only a binary contrast indicated as M vs. L:

Table 5. Corresponding tones between Leggbo and Proto-Bantu

<i>Leggbo</i>	<i>PB</i>		<i>Leggbo</i>	<i>PB</i>		<i>Totals</i>
M	*H	22	M	*L	Ø	22 *H
L	*L	15	L	*H	3	16 *L
corresponding:		37	non-corresponding:		3	

Again, the consistency of the correspondences is encouraging (37 vs. 3).

When we get further out into Igboïd, it gets a little harder. Part of the problem is that the group has reduced most proto forms to CV roots. Among more than 600 proposed Proto-Igboïd reconstructions, Williamson, Blench & Ohiri-Aniche (2016) provide potential PB analogues for 174 verbs. Without critically evaluating them (some appear to be listed perhaps only to show that the PB root is not cognate), the tonal correlates appear to be problematic (note how few PIgb *L verbs are reconstructed):

Table 6. Corresponding tones between Proto-Igboïd and Proto-Bantu

Proto-Igboïd						
<i>Totals:</i>	*HH	*HL	*LH	*L	*H	
89	<u>11</u>	<u>11</u>	13	3	<u>51</u>	: Proto-Bantu *H
85	8	11	<u>25</u>	<u>5</u>	36	: Proto-Bantu *L
<i>Totals:</i>	19	22	38	8	87	

In Table 6 I have underlined the numbers where the PIgb first tone corresponds to PB, which turns out to produce 103 corresponding vs. 71 non-corresponding tones or 59%, hence not extremely impressive. Since some of the resemblances may not indicate a common proto form, I recalculated with 41 PIgb reconstructions which look the most likely to be cognate with PB:

Table 7. Corresponding tones
between most likely Proto-Igboïd and Proto-Bantu cognates

Proto-Igboïd						
	*H	*L	*LH	*HL	*HH	<i>Totals: Corresponding:</i>
Proto-Bantu *H :	<u>13</u>	0	5	<u>2</u>	<u>5</u>	25 20 vs. 5
Proto-Bantu *L :	6	0	<u>5</u>	3	2	15 5 vs. 11
<i>Totals:</i>	19	0	10	5	7	41 25 vs. 16

As seen, this produces 25 out of 41 or 61% corresponding tones, hence no significant improvement. Either many of the PIgb reconstructions are not

cognate with PB, or there have been significant changes in Igbo verb tones. Some of the best PIgb/PB correspondences are shown in Table 7 (where _~ = nasalization):

Table 8. Some of the best Proto-Igbooid and Proto-Bantu cognates

*H/*H	*dĩ / *dí	‘eat’	*ṛṛ / *ṛṛ~ṛó	‘drink’
	*t’ṛ / *tóng	‘build’		
*H/*L	*gwó / *gòn	‘snore’	*tí / *tì	‘tell/say’
	*cú / *còb	‘rub’		
*LH/*H	*pǒ / *púm	‘exit’	*ḍyǎ / *ḍóad	‘be ill’
	*pwǒ / *púd	‘blow/mouth’		
*LH/*L	*lĩCĩ / *ḍĩk	‘bury’	*lòwṛ / *ḍò	‘fight’
	*kpǒ / *kòd	‘scrape’		
*HL/*H	*ḍǎ / *ḍáád	‘sleep’	*tô / *tó	‘pound’
*HL/*L	*jô / *jòd	‘buy’	*ḍìò / *ḍì	‘be’
	*lũ / *ḍòd	‘be bitter’		
*HH/*H	*nínṛ / *nínk	‘give’	*ḍṛá / *ḍóót	‘dream’
	*bíó / *bá	‘be’		
*HH/*L	*nínṛ / *nè	‘defecate’	*lòCò / *ḍòng	‘marry’

It should be noted that there are at least three tonal classes of verb roots in certain Igbo lects (Williamson, Blench & Ohiri-Aniche 2016:2), and that the second syllable/tone of verbs may either be archaic, or Igbooid innovations. The question is whether we have moved too far away from Bantu for the tones to correspond—or is something else going on.

3. Second syllable tone

Up to this point I have been operating under the following three related assumptions: (i) NC verb roots are monosyllabic; (ii) NC verb roots can be studied in morphological isolation; (iii) NC verb roots contrast only two tones (*H and *L). With respect to this last point, no evidence has been found for more than two tones in PNC. The four tonal configurations in PIgb, are potentially predictable from the structure of NC stems: (non-derived) nouns have monomorphemic, mostly bisyllabic roots (=stems), e.g. *CVCV, while verbs have monomorphemic, monosyllabic roots + a suffix or suffixes, e.g. *CVC-V. Exceptions to this dichotomy are found, e.g. in Mande and Ijoid, where bisyllabic (and potentially longer) verb stems are monomorphemic as well: “So far, there is no reason to postulate for the verb in Proto-Mande a root structure different from the noun” (Valentin Vydrin,

pers.comm.). There are at least three alternative explanations for this: (i) this might be an archaic feature of PNC preserved in these early branches, with verb suffixes developed later; (ii) these subgroups could have lost the verb morphology; (iii) these subbranches are not NC.

There are other NC languages which look like they have monomorphemic CVCV verb roots, but the second (C)V may have once been a suffix. Evidence for this can be derived from the fact that many NC languages restrict the second vowel of CVCV verbs. For example, Leggbo allows only /i/ and /a/ (the latter assimilating to a preceding non-high vowel), which can be traced back to Proto-Upper-Cross (Dimmendaal 1978). Of his 100 reconstructed verbs, 45 are monosyllabic, 55 bisyllabic, with the following V1+V2 distributions:

Table 9. V1/V2 distributions in Proto-Upper-Cross

V1 →	*i	*e	*ɛ	*u	*o	*ɔ	*a	Totals
V2 = *i :	4	2	1	2	5	0	9	23
V2 = *a :	9	2	0	3	8	0	7	29
Totals :	13	4	1	5	13	0	16	52

As seen, 52 out of the 55 bisyllabic reconstructions have either *i or *a as their second vowel. The three exceptions are *ppénè ‘return’, *bene ‘remember’ and *kwùŋ(ede) ‘open’.

There are three possible explanations for why a language may allow only CVCi and CVCa bisyllabic stems: (i) All other *V2 vowels have fallen out, leaving the verb monosyllabic; (ii) All other *V2 vowels have merged with *i and *a; (iii) V2 vowels may be relics of suffixes which may have been limited to *i and *a. That suffixes can fail to exploit all of the vowel possibilities of the initial root syllable is dramatically seen in Kulango (Gur), where the 18 verb extensions have only *i*~*ɪ*, *u*~*ʊ* and *a* (Elders 2008:195).

This contrasts with the vowel combinations in 424 Kalabari (Ijoid) bisyllabic verbs drawn from a lexicon of 764 verbs collected with Otelemate Harry, whose gaps do not suggest a suffixal origin. In Table 10, I, U, E, O, A stand for [±ATR] vowels. All five of these lexically contrast in both V1 and V2 position. The gaps that appear look like “normal” morpheme-structure conditions, perhaps also found in nouns: (i) *I-U, *U-I, *E-U, *U-E (with four exceptions); (ii) *E-O, *O-E; (iii) *A-E, *A-O. Kalabari thus clearly allows bisyllabic, monomorphemic verb stems. The only unambiguous verb suffix is *-ma* ‘causative’: 102 out of 210 trisyllabic verbs and all 20 quadrisyllabic verbs end *-ma*. See however Blench & Williamson (2015) for

evidence of extensions in related Izon, none of which show clear cognacy with the rest of Niger-Congo.

Table 10. V1/V2 distributions in Kalabari

V1	V2					Totals:
	I	U	E	O	A	
I	42	0	20	9	19	90
U	0	26	4	10	18	58
E	38	1	38	0	3	80
O	37	11	0	49	7	104
A	36	7	1	1	47	92
Totals:	153	45	63	59	94	424

4. Verb extension tone

In most subbranches of NC there is evidence of (sometimes extensive) verb suffixation. If a verb stem consists of a root + suffix, and if each morpheme had a tone, then this predicts four verb tone patterns: H+H, H+L, L+L, L+H. The question is whether we find this in NC, and if so, where and at what proto stage. First, it is quite common for there to be H vs. L inflectional suffix tones marking tense-aspect. These tones rarely become lexicalized in the sense of becoming part of the lexical tone of some roots vs others. On the other hand we find occasional H vs. L derivational suffixal tones (“verb extensions”), which can be more readily lexicalized, ultimately losing their independent morpheme status. This likely is the story for Upper Cross. However, PB is clearly reconstructable with tripartite verb stems consisting of a root + extensions + final inflection. According to Meeussen (1967): (i) H and L contrasted on final inflectional endings **-a*, **-e*, **-I*, **-il-e*; (ii) verb extensions were toneless, e.g. **-ic-* ‘causative’, **-id-* ‘applicative’, **-an-* ‘reciprocal’; (ii) the tone of the final inflectional morpheme was copied onto preceding toneless extensions.

This last point is shown in the Lingala examples (Table 11) from Guthrie, cited by Schadeberg (1977:198). As seen, all of the tones that follow the L root *-kàk-* ‘get confused’ and H root *-tél-* ‘stagger’ are identical. The derivational sequences *-at-an-* and *-eng-an-* copy their tone from the final vowel, which in this case is either /-à/, /-í/ or /-á/, depending on the inflectional TAM.

Table 11. Extension tones in Lingala

	‘to get confused’		‘to stagger’		
	<i>pre-stem</i>	<i>stem</i>	<i>pre-stem</i>	<i>stem</i>	<i>final V</i>
a. infinitive:	kò-	kàk-àt-àn-à	kò-	tél-èng-àn-à	/-à/
future:	nà-kò-	kàk-àt-àn-à	nà-kò-	tél-èng-àn-à	/-à/
subjunctive:	ná-	kàk-àt-àn-à	ná-	tél-èng-àn-à	/-à/
b. past:	nà-	kàk-át-án-í	nà-	tél-éng-án-í	/-í/
remote past:	nà-	kàk-át-án-á	nà-	tél-éng-án-á	/-á/
imperative:		kàk-át-án-á		tél-éng-án-á	/-á/

I am aware of two exceptions of contrastive tone on extensions in Bantu. For still unexplained reasons Chichewa distinguishes /H/ and toneless (< *L) extensions (Hyman & Mtenje 1999):

Table 12. Extension tones in Chichewa

Toneless extensions

mat-a ‘plaster/glue’

mat-il-a	‘plaster/glue for/at’ {applicative}	
mat-its-a	‘cause to plaster/glue’	{causative}
mat-an-a	‘plaster/glue each other’	{reciprocal}
mat-ul-a	‘unplaster/unglue (tr.)’	{reversive tr.}

H tone extensions (the /H/ is realized on the final vowel)

mat-ik-á	‘be plasterable/gluable’	{stative}
mat-its-á	‘plaster/glue a lot/well’	{intensive}
mat-uk-á	‘become unplastered/unglued’	{reversive intr.}

Dialectal toneless ~ H tone extension

mat-idw-a	‘be pastered/glued’	[Ntcheu]	{passive}
mat-idw-á	” ” ”	[Nkhotakota]	

The second exception concerns causative *-i- and passive *-o- which sometimes impose a H tone. Meeussen (1967:92n) suggests the H may be archaic, that these two suffixes were *H. On the other hand, Hyman & Katamba (1990) argue for Luganda and Kinande that the extra H is inflectional: when *-i- or *-o- is present in an appropriate tense-aspect with a final inflectional H, a second enclitic =H is assigned. My speculation has been that *-i- and *-o- were originally verb-final “grade” suffixes (Hyman 2007:161) marked by an inflectional H (vs. toneless derivational VC

extensions in the “prosodic trough”). This may explain why they are implicated in longer **-iC-i-* and **-iC-ʊ-*. The issue, however, is still unsettled. (For recent work on the tonal effects of **-i-* and **-ʊ-*, see Ebarb & Marlo 2010 and Ebarb 2012). What can be said is that most verb extensions (and lexicalized second syllables) do not contrast in tone in Bantu (and Bantoid) languages.

When we move outside of Bantu and Bantoid, we find two different situations. First, extensions are mostly toneless in some NC languages:

(i) At the west end of NC, Kisi (“Atlantic”) causative *-i* and benefactive *-lul*, as well as plural extensions are toneless vs. the “middle” suffix *-nūŋ* (Childs 1995a:171-194). Childs (1995b:207) sees the toneless extensions as lacking accent: “Verb extensions cause the verb root to be analyzed as accented since the extensions are without tone....”

(ii) In the far northeast, in Moro (Kordofanian) the benefactive applicative *-aḏ*, locative applicative *-aḏ*, passive *-ən* and anti-passive *-əḏ* extensions are all underlyingly toneless: “...the tone pattern of the basic stem applies to the forms with extension affixes, too.” (Rose 2013:45). However, Rose adds: “... the causative requires a H tone on the preceding stem in default verbs, and allows no H tone on the causative marker” (p.47). Given the Bantu situation, it is intriguing to note that the shape of the H-imposing causative suffix is *-i*.

(iii) In between the above two geographical extremes, Cicipu (Kainji)) extensions such as causative *-is-* and applicative *-wA-*, are underlyingly toneless, taking mostly the L tone of the different melodies assigned by mood, e.g. realis LHL, irrealis HL, imperative LH (McGill 2009).

However, in other NC languages, verb extensions have their own inherent tone:

(i) In Konyagi (Atlantic), of 21 verb extensions 15 are H (e.g. *-năn* ‘causatif’), two are L (e.g. *-ì* ‘rapprochant’), three are HL (e.g. *-âl* ‘réciproque’), and one is toneless (*-ət* ‘intensif’) (Sachot 1996:314).

(ii) In Guébié (Kru), which has four tone heights 1-4 (4 = highest), passive *-o/-ɔ* has 1 tone, while causative *-a/-ə*, applicative *-li/-lɪ* and reciprocal *-li/-lɪ* have 2 tone (Sande 2016). (The reciprocal causes the verb to reduplicate and also take 2 tone.)

(iii) In Kana (Lower Cross) causative *-(r)ɛ* has M tone, while anticausative *-a* is toneless; intensive *-gara ~ -ga ~-gi* cause a M tone verb root to become L and place a H on the last (or only) vowel of the suffix (Ikoro 1996:153-4). In closely related Gokana causative *-(C)è* is L tone, while anticausative *-a* is toneless (personal notes).

(iv) In Katla (Kordofanian) some extensions have independent tone, e.g. comitative -*ôŋ/-âŋ* and goal -*âŋ* (Hellwig 2013:241), while causative -*ka/ka* and applicative -*taŋ/taŋ* “copy their tone from the preceding syllable” (Birgit Hellwig, pers.comm.).

Mande languages generally do not have verb extensions. However, where suffixes do occur, they appear to undergo a general process of tonal reduction (“compacité”) which normally applies to compounds, e.g. in Maninka du Niokolo:

“A l’exception du suffixe résultatif -*’riŋ* ~ -*’liŋ* ~ -*’diŋ* et du suffixe causatif -*’ndiŋ*... les suffixes dérivatifs ont un comportement tonal qu’on peut décrire très simplement en posant qu’ils ne comportent structurellement aucun ton haut et que la base à laquelle ils s’attachent est modifiée exactement comme dans une construction à compacité tonale” [Creissels 2013:28].

However, it should be noted that of the 22 derivational suffixes listed by Creissels [2013: 54-57], only two are shown to uniquely involve V → V derivation, namely, causative -*’ndiŋ* and antipassive -*ri* ~ -*li* ~ -*diri*, the latter of which is mostly used to set up a verb for nominalization (p.56). On the other hand, Creissels [2016: 62-64] shows that causative -*ndí* has H tone and antipassive -*ndì* has unique tonal properties in Soninke.

5. Discussion

It is clear that extension tones have to be considered in any attempt to establish the tones of PNC and their reflexes in the different subbranches. Assuming the normal grammaticalization scenarios by which suffixes come from free morphemes (which in turn carry tone), two outstanding questions are: (i) What causes derivational suffixes to lose their tone? (ii) Why should this affect derivational suffixes more than inflectional? The answer I would like to propose is lexicalization: Derivational morphology creates new lexical items, which speakers may ultimately store, rather than productively generate, as is also the case with compounding. What is stored ultimately undergoes fusion, erosion, and other reduction processes, including the loss of the suffixal tone. On the other hand, inflectional morphology, unless irregular, is generally not lexicalized, rather is expected to apply across the board to the appropriate bases, e.g. tense, aspect, mood marking on verbs. Of course inflectional morphemes can become toneless as well, or even lost in the case of languages which do not inflect verbs morphologically, but this is not driven by lexicalization.

The above natural history (rise and fall) feeds into the task of determining whether the extensions we find are ancient or relatively new. If they were obviously cognate, we could be certain. The problem is that they are small (typically one or two segments) and can easily give the false impression of cognate — even across unrelated languages (Hyman 2014). The following table summarizes some of the clues to determining the age of an extension, including tone:

Table 13. Clues to determining the age of a verb extension

if relatively young, we expect an extension to ...

- have a transparent source in a verb or preposition
- have no cognates or only in closely related languages
- be functionally/semantically transparent
- occur only where corresponding roots exists
- be further from the root than other suffixes
- be syntactically dependent
- be CV, easily segmentable from other forms
- not have allomorphs
- have its own contrastive tone (like enclitics)

if relatively old, we expect an extension to ...

- have an opaque or no source in a verb or preposition
- have cognate forms in distantly related languages
- have multiple, unpredictable functions
- have frozen forms without any corresponding verb root
- be closer to the root than other suffixes
- be syntactically independent
- be V(C), more fully integrated with the base
- have allomorphs
- receive its tone from verb or inflection

The last point concerning tone can be illustrated by means of the tonally contrastive verb extensions from languages from different African stocks, all of which have verb extensions (see Table 14). Since these extensions have recently been created from the verbs on the right, they still have an inherent tone. It is only with age that their tone will give way to the lexical tone of the verb or to the tone of the tense-aspect configuration.

Table 14. Recently developed verb extensions in unrelated languages

Vute	(Bantoid)	-nà	applicative	<	nà	‘to give’	(Thwing 2006:4)
		-lé	‘in, into’	<	lé	‘to enter’	(Thwing 2006:27)
Khoe	(Central Khoisan)	-mà	benefactive	<	mà	‘to give’	(Kilian-Hatz 2005:130)
Margi	(Chadic)	-bá	‘outward’	<	bà	‘to go out’	(Hoffmann 1963:124)

6. Conclusion

So where we do stand? It is likely that PNC had two tones, *H and *L, as others have asserted, as there is no evidence of any more (or less). PNC verbs roots had a binary contrast, *H vs. *L, which some languages either lost or expanded. Finally, PNC verb extensions may have had contrastive tone, even though they appear to be toneless in most daughter languages (a more thorough survey is currently in progress). With respect to this last point, outside of the Chichewa and causative *-i- and passive *-o- cases discussed in §4, I have found no evidence of contrastive tone on any of the cognate extensions that can be reconstructed back to PNC (or close to it), e.g. those Gur shares with PB:

Table 15. Moore-Proto-Bantu verb extension correspondences

<i>Moore</i> (Canu 1976)	<i>Proto-Bantu</i> (Meeussen 1967; Schadeberg 2003)
be in a state	*-ib-o- passive
-d produce by putting into a state	*-ol- reversive transitive (?)
-d locative	*-il- applicative
-g put into a state	*-ik- impositive
-g repeated action, intensive	*-a(n)g- plural, durative
-g inversive	*-ok- reversive intransitive
-l amplitude, certitude	*-ilil- completive, intensive
-m positional	*-am- stative (positional)
-s causative	*-is- causative

This raises the question of whether those extensions which do have independent tones have been independently innovated subsequent to the break-up of the NC sub-branches.

Where to go from here? It is easy to say, but more historical work is needed to determine if verb root tones in other branches further confirm PNC *H and *L and whether verb extension tones can be reconstructed, either at the PNC or a pre- or post-PNC stage.

References

- Bastin, Yvonne, André Coupez, Evariste Mumba, and Thilo C. Schadeberg (eds). 2002. Bantu lexical reconstructions 3 / Reconstructions lexicales bantoues 3. Tervuren: Royal Museum for Central Africa, online database: <http://linguistics.africamuseum.be/BLR3.html>
- Blench, Roger. 2004 [2016]. The Benue-Congo languages: a proposed internal classification. Working document on line [http://www.rogerblench.info/Language/Niger-Congo/BC/General/Benue-Congo classification latest.pdf](http://www.rogerblench.info/Language/Niger-Congo/BC/General/Benue-Congo%20classification%20latest.pdf)
- Blench, Roger & Kay Williamson. 2015. Izon verbal extensions. *Studies in African Linguistics* 44.59-73.
- Canu, Gaston. 1976. *La langue mò:rē*. Paris: Société d'Etudes Linguistiques et Anthropologiques de France.
- Childs, G. Tucker. 1995a. *A grammar of Kisi*. Berlin: Mouton de Gruyter.
- Childs, G. Tucker. 1995b. Tone and accent in Atlantic. In Anthony Traill, Rainer Vossen & Megan Bieseke (eds), *The complete linguist: Papers in memory of Patrick J. Dickens*, 195-215. Köln: Rüdiger Köppe Verlag.
- Creissels, Denis. 2013. Le maninka du Niokolo (Sénégal oriental). *Mandenkan* 49.
- de Wolf, Paul. 1971. *The noun class system of Proto-Benue-Congo*. The Hague: Mouton.
- Creissels, Denis. 2016. Phonologie segmentale et tonale du soninké (parler de Kingi). *Mandenkan* 55.3-174.
- Dimmendaal, Gerrit. 1978. *The consonants of Proto-Upper Cross and their implications for the classification of the Upper Cross languages*. Doctoral dissertation, University of Leiden.
- Ebarb, Kristopher. 2012. *Tone and variation in Idakho and other Luhya varieties*. Doctoral dissertation, Indiana U.
- Elias, Philip, Jacqueline Leroy & Jan Voorhoeve. 1984. Mbam-Nkam or Eastern Grassfields. *AfÜbersee* 67.31-107.
- Elders, Stefan. 2008. *Grammaire kulango (parler de Bouna, Côte d'Ivoire)*. Köln: Rüdiger Köppe Verlag.
- Greenberg, Joseph H. 1948. The tone system of Proto-Bantu. *Word* 4.196-208.
- Guthrie, Malcolm. 1967-1971. *Comparative bantu*, vols. I-IV. London: Gregg Press.
- Heath, Jeffrey. 1999. *A grammar of Koyra Chiini*. Berlin & New York: Walter de Gruyter.
- Hellwig, Birgit. 2013. Verbal morphology in Katla. In Thilo C. Schadeberg & Roger M. Blench (eds), *Nuba mountain studies*, 237-249. Köln: Rüdiger Köppe Verlag.

- Hoffmann, Carl. 1963. *A grammar of the Margi language*. Oxford University Press.
- Hombert, Jean-Marie. 1984. Les systèmes tonals des langues africaines: typologie et diachronie. *Pholia* 1.113-164, Laboratoire Dynamique du Langage, Université de Lyon 2/CNRS.
- Hyman, Larry M. 1979. Index of Proto-Grassfields Bantu roots. Ms. University of California, Berkeley.
- Hyman, Larry M. 1981. Noni grammatical structure. Southern California Occasional Publications in Linguistics 9. Los Angeles: Univ. of So. California. http://gsil.scil.org/pubs/SCOPILS_6_7_8_9/Noni_grammatical_structure.pdf
- Hyman, Larry M. 2007. Niger-Congo verb extensions: Overview and discussion. In Doris L. Payne & Jaime Peña (eds), *Selected proceedings of the 37th Annual Conference on African Linguistics*, 149-163. Somerville, MA: Cascadilla Proceedings Project.
- Hyman, Larry M. 2014. Reconstructing the Niger-Congo extension paradigm: What's cognate, copied, or renewed? In Martine Robbeets & Walter Bisang (eds). *Paradigm change: In the Transeurasian languages and beyond*, 103-125. Amsterdam: John Benjamins.
- Hyman, Larry M. & Francis X. Katamba. 1990. Spurious high-tone extensions in Luganda. *South African Journal of African Languages* 10.142-158.
- Hyman, Larry M. & Al Mtenje. 1999. Non-etymological high tones in the Chichewa verb. *Malawian Journal of Linguistics* 1.121-256. (Published with font problems. Contact me for cleaner version.)
- Ikoru, Suanu. 1996. *The Kana language*. Leiden: Research School CNWS.
- Kilian-Hatz, Christa. 2005. Verbal derivation in Khwe (Central Khoisan). *Annual Publication in African Linguistics* 2.109-135.
- Marlo, Michael & Kristopher Ebarb. 2010. Non-spurious H-toned extensions in Nyala-West. Paper presented at the 41st Annual Conference on African Linguistics, University of Toronto, May 6-8, 2010.
- McGill, Stuart John. 2009. *Gender and person agreement in Cicipu discourse*. Doctoral dissertation, School of Oriental and African Studies, University of London.
- Meeussen, A.E. 1967. *Bantu grammatical reconstructions*. Tervuren: Musée Royal de l'Afrique Centrale.
- Meeussen 1969[1980]. *Bantu lexical reconstructions*. Tervuren: Musée Royal de l'Afrique Centrale.
- Mukarovsky, H. 1976-77. *A study of Western Nigritic*, 2 vols. Wien: Institut für Ägyptologie und Afrikanistik der Universität Wien.
- Nurse, Derek. 2008. *Tense and aspect in Bantu*. Oxford University Press.
- Rennison, John R. 1997. *Koromfe*. (Descriptive Grammars Series). London and New York: Routledge.
- Rose, Sharon. 2013. The morphological structure of the Moro verb. In Thilo C. Schadeberg & Roger M. Blench (eds), *Nuba mountain studies*, 25-55. Köln: Rüdiger Köppe Verlag.

- Sachot, Rosine épouse Santos. 1996. *Le mey: Langue Ouest-Atlantique de Guinée*. Doctoral dissertation, Université de la Sorbonne Nouvelle Paris 3.
- Sande, Hannah Leigh. 2016. Contrast maintenance and neutralization in Guébie morphophonology. Ms. University of California, Berkeley.
- Schadeberg, Thilo C. 1977. Anticipation of tone: Evidence from Bantu. In P. F. A. Kotey & H. Der-Houssikian (eds), *Language and linguistic problems in Africa*, 195-204. Hornbeam Press.
- Schadeberg, Thilo C. 2003. Derivation. In Derek Nurse & Gérard Philippson (eds), *The Bantu languages*, 71-89. London: Routledge.
- Stewart, John M. 2002. The potential of Proto-Potou-Akanic-Bantu as a pilot Proto-Niger-Congo, and the reconstructions update. *Journal of African Languages and Linguistics* 23.197-224.
- Thwing, Rhonda. 2006. Verb extensions in Vute. Ms. SIL.
- Williamson, Kay & Roger Blench. 2000. Niger-Congo. In Bernd Heine & Derek Nurse (eds), *African languages: An introduction*. Cambridge University Press.
- Williamson, Kay, Roger Blench, & Chinyere Ohiri-Aniche. 2016. Comparative igboid. Ms.